DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING, NITK – Surathkal

CS204: Data Structures and Algorithms Lab

LAB - 1

14th September 2021

Instructions:

1. Implement the following exercise in C/C++.
2. Read inputs from a file and also print the outputs to a file.
3. You are required to complete this exercise by the next lab.
4. Each student should submit their work individually.

Exercise:

1. Given an array A of n integers, construct an array P of same size such that P[i] is equal to the product of all the elements of A except A[i].
   Constraints:
   - Compute P without using the division operator
   - Compute P by traversing the array A only once

2. Given a matrix of size MxN, and elements of first row and column, fill up the matrix such that each cell is the sum of input elements in the corresponding row and column. Use pointers for accessing matrix elements.
   Sample Input:

	2	4	6
1			
7			

   Sample Output:

	2	4	6
1	3	5	7
7	9	11	13

3. A square matrix (n*n) and certain instructions for it are given. The instruction consists of letters L and R, where if the letter L is given, you need to rotate the matrix 90 degrees to the left, and for the letter R you need to rotate the matrix 90 degrees to the right. Write a C/C++ program to display the matrix at the end of the instruction.

Example:

Input:

n = 2 → Size of matrix

30	40
50	60

Instructions: RLR

Output

50	30
60	40

4. Given an array A of distinct integers, and a target integer T, print the list of all unique combinations of elements of A (an element can occur multiple times) where the chosen numbers sum to T.

   Example Input:

   A: 2, 3, 4 T:6

   Output:

   2, 2, 2

   3, 3

   2, 4